USGS

WATER RESOURCES RESEARCH GRANT PROPOSAL

Project ID: 2002MN2B

Title: Effects of riparian forest harvest on instream habitat and fish and invertebrate communities

Project Type: Research

Focus Categories: Water Quality, Management and Planning

Keywords: riparian, logging, fish, benthic macroinvertebrates, best management practices

Start Date: 03/01/2002

End Date: 02/28/2005

Federal Funds Requested: $20000.00

Matching Funds: $6063.00

Congressional District: 7 and 8

Principal Investigators: Newman, Raymond (University of Minnesota); Patrick Brezonik

Abstract: Best management practices for timber harvest are often implemented to allow forest harvest while protecting the aquatic resource, however, the effectiveness of these practices is rarely evaluated. The aim of the proposed research is to evaluate site-based effects associated with applying various riparian management practices (varying density of residual standing trees within a standard RMZ and filter strip width) on aquatic habitat, macroinvertebrates and fish. We will use an experimental manipulation (funded by the Minnesota Legislature) to apply four levels of riparian harvest (riparian control, low riparian harvest, moderate riparian harvest and high riparian harvest) to 5 replicate stream sites. At these sites we will evaluate effects of riparian harvest on fish and invertebrate habitat (temperature, sediment composition and embeddedness, depth, width, cover, bank stability, canopy coverage, woody debris, etc.), benthic macroinvertebrates (rapid bioassessment protocol) and stream fish communities (relative abundance, species richness and an Index of Biotic Integrity). Sites will be sampled above, within and below the treatment area the year prior to harvest and the year after harvest to provide an initial assessment of the effects of harvest treatment and to establish a baseline for longer-term assessment. These results will be used to determine the effects of different levels of riparian harvest on instream processes and to inform water quality managers and policy makers of the efficacy of current and alternative forest harvest best management practices to protect aquatic resources.

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